**IT Applications Unit 3, AOS 1, Online Communities**

1. Complete the following, from pgs. 28- 32: **Transmission media**

**Networks are classified according to below and we will study the following:**

1. Network Categories: LAN, WAN
2. Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet
3. Network communication standards
4. Network hardware and software
5. **Transmission media**
6. Network security

**Transmission media**

**Physical Transmission**

**Twisted – pair cable**

1. What is twisted pair cable?

A twisted pair cable is eight wires that are twisted together in four separate pairs and then twisted as a group. The twisting is used to help prevent interference from the outside.

1. Why do new networks use CAT 5E or CAT 6 rather than CAT 3?

New networks use CAT5E rather than CAT6 or CAT3 because it can support larger transmissions, up to 1GB over short distances.

1. What are some disadvantages of CAT 5E and why is it used in so many installations?

The main disadvantage of CAT5E is it can only be used over short distances.

1. What type of networks is this cable largely used in?

Twisted pair cable is largely used in star networks.

**Coaxial Cable**

1. Describe the characteristics of this cable.

Coaxial cable contains two wires; the inner wire is surrounded by insulation then by copper braid, aluminium or tin foil and then finally another layer of protective insulation.

1. What network is it used in?

Coaxial cable is used in bus networks, where all data travels in both directions away from any computer that originates the message.

**Fibre-optic cable**

1. Describe the characteristics of this cable.

Fibre-optic cable has glass or plastic strands that can transmit light pulses. This light is not susceptible to electrometric interference and so can reliably carry data for up to two kilometres.

1. Why is fibre-optic cable often used to connect major switches inside buildings as well as between buildings

Fibre-optic cable is often used to connect major switches because it can transmit at 100Mbps and is still relatively cheap.

1. What are the disadvantages of this cable?

The major disadvantage of fibre-optic is that that it is only capable of handling one way traffic; this means that for two-way traffic (this is what is desired) a second fibre-optic cable is needed.

**Wireless Transmission,** p 30

**Radio Waves**

1. What is required for radio transmissions to occur?

Radio transmissions require transmitter to transmit the data and a receiver to receive it.

1. Wi-Fi networks use radio waves. What are its advantages over a cable network and what are its disadvantages?

The main advantage of a cable network is that they can be used anywhere in range of the wireless access point, the workstation does not have to be in a fixed position. The main disadvantage of wireless is that it is slower than most cable connections.

1. Describe the characteristics of Bluetooth.

Bluetooth is a standard that uses short-range radio wave to transmit data over a distance of up to 10 meters; its data transfer rate is only 2Mbps.

**Microwaves**

1. Describe the characteristics of microwave transmission.

Microwave transmission requires a line of sight (a direct line where there is no obstruction between the sending dish and receiving dish). Microwave stations can handle high data rates over small distances (4Mbps over 5 kilometres); microwaves pass through the earth’s atmosphere with less interference than radio waves.

1. What are the limitations of microwave transmission?

Microwave stations have to have a line of sight, this means they often have to be places in higher locations to avoid obstruction (e.g. on top of a hill or building).

**Satellite**

1. Satellite transmission can be in what forms?

Satellite transmission can be in the form of radio waves or microwaves.

1. What are the limitations of this form of transmission?

The biggest limitation of satellite transmission is the distance that the waves have to travel to the satellite and back to the earth station.

1. Who might use this form of transmission?

Satellite transmission is often used for television broadcasts, videoconferencing, global positioning systems (GPS), and internet connections (A person can have a small satellite dish attached to their house to access the internet through a service provider).

**Infra-red**

1. Describe the characteristics of infra-red transmission.

Infra-red transmission uses the same technology as TV and video remotes, it is quite effective over short distances but its data transfer rate is slow compared to the use of cable.

1. Why is radio wireless networking preferable to infra-red wireless networking?

Wireless is preferable to infra-red wireless because it does not require a line of sight to transmit data.

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